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(71) Applicant(s)

Kindertec Limited

(Incorporated in the United Kingdom)

St. John's Innovation Centre, Cowley Road,
CAMBRIDGE, CB4 4WS, United Kingdom

(72) Inventor(s)

David Gooch
Chi Cheung Liu

(74) Agent and/or Address for Service

J P L Hooper
5 Haslingfield Road, Harlton, CAMBRIDGE, CB3 7ER,
United Kingdom

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(54) Toy telephone

(57) Some battery-powered child's toy telephones contain speech chips that allow the play-back of a single, short, pre-recorded "spoken" message when, for instance, the child presses the designated button.

The present invention proposes an improved version of this type of toy which uses a chip that can freely be recorded into, and which additionally has sufficient memory that it can be segmented into preferably at least four sections each of which can be played back from (and first recorded into) quite independently from the others, the toy 'phone then incorporating means whereby the child can choose the segment having the message it wishes to hear. The toy 'phone is provided with playback/record buttons 15 to select the appropriate segment to have a recorded message played back from or recorded into. The buttons 15 may be fitted with a name card or small photograph.

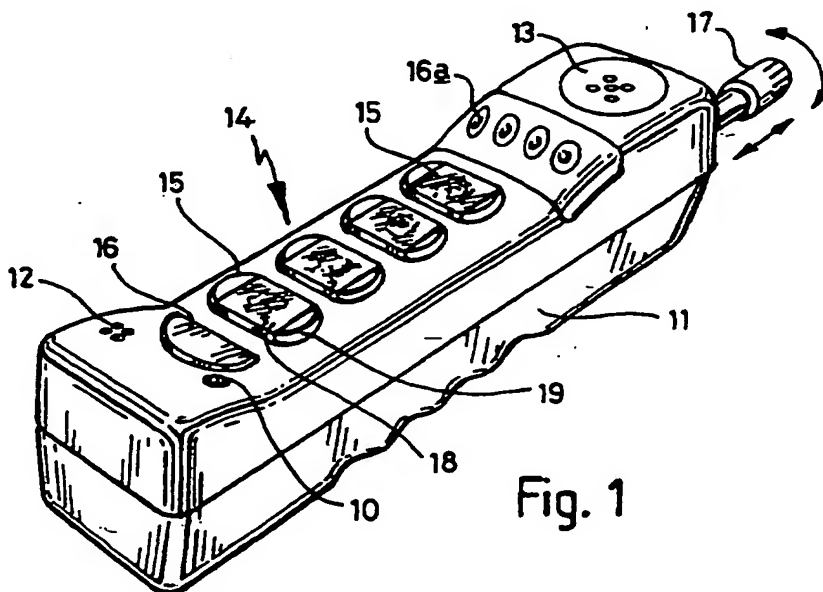
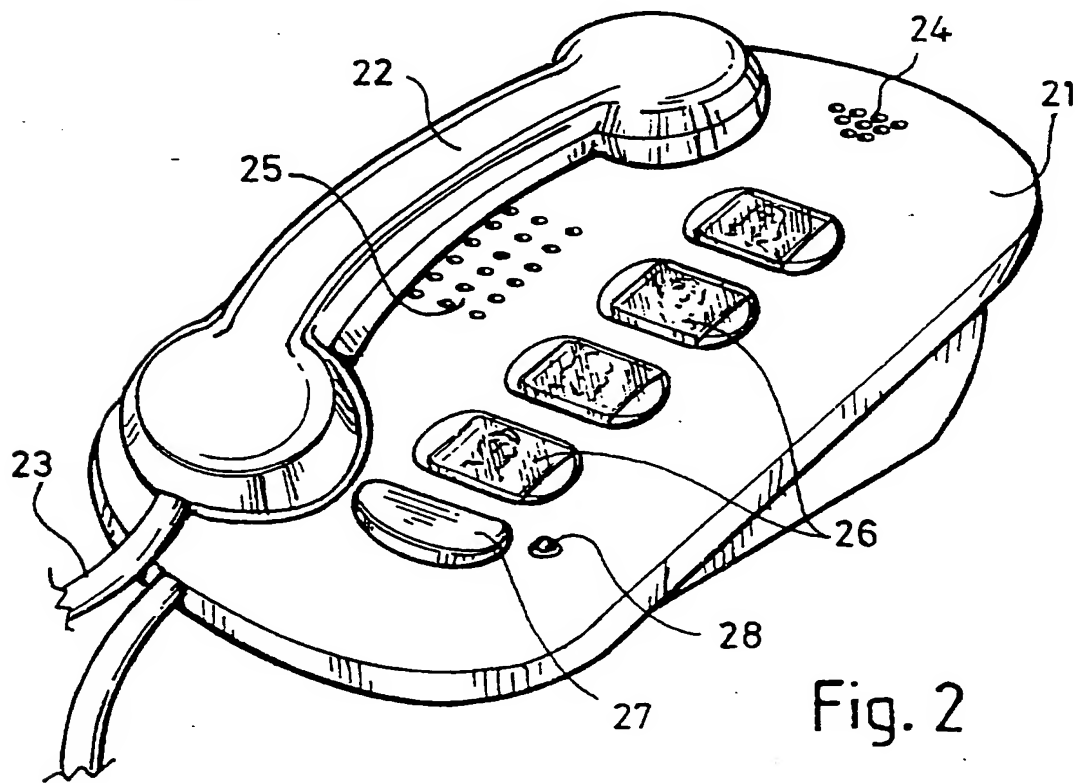
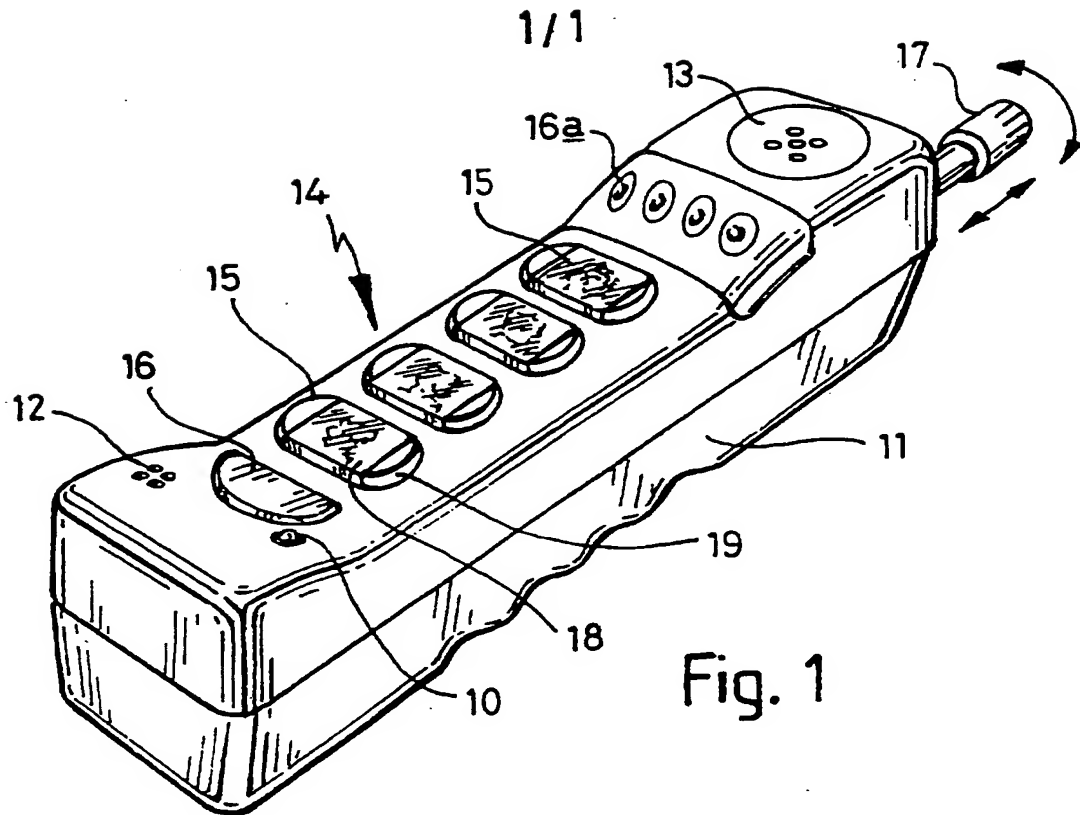


Fig. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995



Toys

This invention concerns toys, and relates in particular to toy telephones that can provide the children playing with them with a pre-recorded spoken message.

It is known to make a battery-powered child's toy telephone that contains a speech chip - an integrated circuit digital semiconductor device with a memory, a control unit capable of converting appropriate data stored in memory into a signal representing speech, and signal output means linkable to a speaker - that allows the play-back of a single, short, pre-recorded "spoken" message (such as "Hullo, dear. This is Mummy talking to you") on command (when, for instance, the child presses the designated button). The toy telephones like this presently available are somewhat limited in what they can do and how well they do it (and, of course, to the pre-recorded message they contain), and the present invention proposes an improved version of this type of toy. More specifically the invention suggests firstly the use of a chip (and associated microphones and signal input means) that can freely be recorded into either by the child itself or, and more preferably, by the child's Parents, Grandparents or other relations (or friends), and secondly the use of a generally improved chip that has sufficient memory that it can be segmented into preferably at least four sections each of which can be played back from (and first recorded into) quite independently from the others, the toy 'phone then

incorporating means whereby the child can choose the segment having the message it wishes to hear.

In one aspect, therefore, this invention provides a child's toy telephone that contains a speech chip - a digital integrated circuit semiconductor device with a memory, a control unit capable of converting the data stored in memory into a signal representing speech, and signal output means linkable to a speaker - wherein:

the chip is recordable, and is associated with a record/playback mode select means, a microphone, and a signal input means, such that a voice can be recorded therein;

the chip has its memory segmented into a plurality of sections each of which can be recorded into (and played back from) quite independently from the others; and

the 'phone incorporates message selection means whereby the User can choose which chip memory segment to have the recorded message played back from or recorded into.

The invention's toy telephone contains a speech chip which has the standard components for such a chip, namely a memory (conveniently in the form of an Electrically Programmable Read-Only Memory [E-PROM]), a suitable control unit, and a signal output means. It also has a signal input means, and its memory segmented into a plurality of sections. A suitable example of such a chip is an PMS6588 available from Motorola.

The chip has its memory segmented into a plurality of sections each of which can be recorded into (and

played back from) quite independently from the others. It will be clear that the number of sections, the total length of the record capability, and the size of the memory are operatively linked. Thus, for any given memory size the chip can store either more short messages - say, four each of eight seconds, or five each of six seconds - or fewer long messages - say, three each of ten seconds. The bigger the memory, the more or longer the messages that can be stored, as required. When storing speech of reasonable quality (the higher the quality, the more memory is needed), eight to ten seconds worth of digitized sound can be stored in 1 megabyte of memory (this gives an acceptable sampling rate of 8 kHz with 3 bit sampling). For most purposes a chip which permits four eight-second messages of reasonable quality is sufficient.

The toy telephone of the invention has its speech chip associated with a microphone (sound input means) and a speaker (sound output means). These may be of any suitable form - in one embodiment the microphone and speaker will be the microphone and earphone as found in the handset of a conventional telephone, and will similarly be disposed within the toy 'phone's handset, while in a second the two may be within the main body of the 'phone, the handset being merely a dummy. No more need be said about them here.

The toy 'phone incorporates message selection means whereby the User - that is, either the child playing with the 'phone or the Adult recording the message - can choose from which chip memory segment to have the recorded message played back (or, of course, recorded into). The selection means is most preferably a set of push buttons, one for each memory segment (and thus message), much like those on a real 'phone (though advantageously somewhat larger, as befits the less

precise fingers of a child), electromechanically connected internally of the 'phone so as to make the correct connection when pushed. It is much preferred that these buttons be large enough to have affixed to them, or in them (slid under a top cover, say) either a photograph or the name of the person with whose message they are associated. In that way the child using the toy need merely press the button with, for instance, its mother's picture, and it will hear its mother's voice speaking to it.

The 'phone of the invention incorporates record/playback mode selection means - conveniently a switch hidden away in, say, the battery compartment, and appropriately connected to the speech chip's control section - that can be used to switch it between a first state in which messages can be recorded in the chip's memory and a second state in which the recorded messages can be played back. Thus, when recording a message the relevant person, such as the Mother or Grandfather, need first switch the system to record mode, then press the appropriate button - this both selects the associated memory segment and triggers the chip's recording process - and speak the message (it is convenient to provide a visible warning, such as a lit or flashing Light Emitting Diode [LED], as the recording time is near to running out). The mode select switch is then operated to place the 'phone in playback mode, and thereafter, when the child presses that particular button, it will hear the thus-recorded message.

The invention's toy 'phone may incorporate many of the other "play" devices or use features used or suggested for use with toy 'phones. For example, for play features it may have a ringer, that causes it to emit a noise like a telephone ringing, and that is

activated by pressing another button on the keypad. Again, it may have an extendible aerial (such as found in many mobile 'phones), particularly one that makes some satisfactory noise - such as a clicking sound as made by a ratchet - when it is pulled or pushed out and in, or is twisted around. Similarly, for a use feature it may have voice-activation means, so that a message is broadcast as soon as the 'phone picks up the sound of the child talking to it (indeed, in one particular embodiment it is preferred that the message to be played back be chosen by the child using the appropriate message select means, and for the toy, when voice activated, to play back whatever message was last chosen). Again, although it is possible for the output of the speech chip to drive the speaker directly, it is much preferred that the 'phone contain signal amplification means to which the signal from the speech chip is supplied for amplification prior to being sent to the speaker. And of course, as a battery-powered device it is preferred that it have an "auto power off" feature, to enable it to shut down after a few minutes, and so save the battery, if the child stops playing with it.

Two embodiments of the invention are now described, though by way of illustration only, with reference to the accompanying Drawings in which:

Figure 1 shows a perspective view of a version of the toy telephone of the invention suitable for children of about 2 years and upwards;

Figure 2 shows a perspective view of a version of the toy telephone of the invention suitable for very young children, of between 6 months and 2 years old; and

Figure 3 shows a block schematic diagram for a 'phone as in either of Figures 1 and 2.

The toy telephone shown in Figure 1 is modelled on a conventional, real, mobile 'phone. It has a main body (11) with a microphone grill (12) at the bottom (as viewed) and an earphone grill (13) at the top, and between the two is a keypad (generally 14) containing four keys (as 15) that trigger message playback (or record) and a fifth key (16: with associated flashing LEDs, as 16a) that causes the 'phone to emit a ringing noise. It also has an aerial (17: shown retracted) which can be extended or twisted, so giving a ratchety, clicking noise, and a record duration warning LED (10) adjacent the microphone grill 12.

Each playback/record button 15 has an upper surface (as 18) slightly raised/spaced from a lower surface (as 19), and into the gap between the two can be slid, from the side, a name card or a small photograph, or the like.

In the battery compartment (not shown, but accessible from the rear surface) is the record/playback mode select switch (not shown).

The embodiment of Figure 2 is more suitable for very young children. It has a main body (21) and a separate handset (22: this is "pretend") connected to the body by a cord (23). The body contains a microphone and speaker (behind grills 24,25 respectively), has four message select buttons (as 26: these are much like the select buttons 15 on the Figure 1 version) and a ringer button (27), and has a record duration warning LED (28) adjacent the ringer button 27.

This version, too, has a battery compartment (not shown, but accessible from the rear surface), and in this is the record/playback mode select switch (not shown).

The block schematic diagram of Figure 3 shows the electronic arrangement of the components of the toy 'phone of the invention. The speech chip is here shown as its three main parts - a microprocessor MCU (the control means), a voice processor (the voice data converter) and a voice register (the memory) - suitably interlinked with a microphone (and its amplifier), a speaker (and its amplifier) a record/playback mode select switch, and the four message select buttons (K1-K3) and the ringer button. It is not necessary here to show an actual circuit diagram, or to describe the electronics of the 'phone's operation, for these will be easily appreciated by the skilled electronics engineer.

CLAIMS

1. A child's toy telephone that contains a speech chip - a digital integrated circuit semiconductor device with a memory, a control unit capable of converting the data stored in memory into a signal representing speech, and signal output means linkable to a speaker - wherein:

the chip is recordable, and is associated with a record/playback mode select means, a microphone, and a signal input means, such that a voice can be recorded therein;

the chip has its memory segmented into a plurality of sections each of which can be recorded into (and played back from) quite independently from the others; and

the 'phone incorporates message selection means whereby the User can choose which chip memory segment to have the recorded message played back from or recorded into.

2. A toy telephone as claimed in Claim 1, wherein the speech chip has its memory segmented into four sections each of which is of a size sufficient to store eight to ten seconds worth of digitized sound.

3. A toy telephone as claimed in either of the preceding Claims, wherein the microphone and speaker are each disposed within the toy 'phone's handset, or are each disposed within the main body of the 'phone

4. A toy telephone as claimed in any of the preceding Claims, wherein the message selection means is a set of push buttons, one for each memory segment, electromechanically connected internally of the 'phone so as to make the correct connection when pushed.

5. A toy telephone as claimed in Claim 4, wherein the buttons are each large enough to have affixed to them,

or in them, either a photograph or the name of the person with whose message they are associated.

6. A toy telephone as claimed in any of the preceding Claims, wherein the record/playback mode selection means is a hidden switch appropriately connected to the speech chip's control section.

7. A toy telephone as claimed in Claim 6, wherein there is a visible warning means operable as the recording time is near to running out.

8. A toy telephone as claimed in any of the preceding Claims, wherein the toy 'phone incorporates one or more of: a ringer; an extendible aerial; voice-activation means; signal amplification means; and "auto power off" means.

9. A toy telephone as claimed in any of the preceding Claims and substantially as described hereinbefore.



The Patent Office

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Application No: GB 9520906.0
Claims searched: 1 - 9

Examiner: Roger Casling
Date of search: 13 January 1997

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK CI (Ed.O): A6S
Int CI (Ed.6): A63H
Other: Online:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 5184971 (WILLIAMS) see whole document, particularly column 4 line 1 et seq	1 - 5 and 7 at least

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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